INTERNATIONAL QUALIFICATIONS

AND ASSESSMENT CENTRE (IQAC)

«Approved»

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Programme	**LEVEL 5 EXTENDED DIPLOMA IN CYBER SECURITY**		
Unit Number/ Unit Title	**UNIT 12 CAPSTONE PROJECT**		
Cohort Code:	L05CPSP-U12		
Unit Level	Level 5		
Total GLH	Total qualification time 200/ Total Guided learning hours 90/ Self-guided learning hours 110		
Credits	20 CATS/ 10 ECTS		
Lecturer			
Start Date		**End Date**	

Unit Aims	To provide students with the opportunity to apply their accumulated knowledge and skills from the cybersecurity program to a comprehensive, real-world project. This module is designed to demonstrate students' ability to analyze, design, implement, and manage a cybersecurity solution or research project, showcasing their proficiency in cybersecurity practices.
Differentiation Strategies *(e.g. planned activities or support for individual learners according to their needs)*	The total number of students to be in the lesson is approximately 20. This is a multicultural group of students predominantly between the ages of 24 – 45, with numerous ethnic, gender, and creed background. These are UK academic level 5 students; hence it is assumed that they have practical, theoretical, or technological knowledge and understanding of a subject or field of work to find ways forward in broadly defined, complex contexts. These students must be able to generate information, evaluate, synthesise the use information from a variety of sources. Various approaches to addressing the various identified students' needs will be adopted throughout the lesson. Such will include: - 1. Progressive tasks 2. Digital resources 3. Verbal support 4. Variable outcomes

	5. Collaborative learning 6. Ongoing assessment 7. Flexible-pace learning
Equality & Diversity	Variety of teaching techniques will be employed to ensure that the needs of each individual learner are met.
Safeguarding & Prevent	Safeguarding policies and the Prevent duty are strictly observed to ensure the safety, well-being, and inclusivity of all students and staff.
Health & Safety	SIRM H&S policies will be maintained.
Learning Resources	**Teaching and Learning Materials** • "The Cybersecurity Body of Knowledge: The ACM/IEEE/AIS/IFIP Recommendations for a Complete Curriculum in Cybersecurity" edited by Daniel Shoemaker, Anne Kohnke, Ken Sigler. • "Project Management for Research: A Guide for Engineering and Science" by Adedeji B. Badiru. • "Writing for Computer Science" by Justin Zobel.

Learning Outcome	Assessment Criteria
LO1. 1. Identify and define a cybersecurity problem or research question.	**1. Project Proposal:** 1.1 Develop a clear and concise project proposal outlining the scope, objectives, and significance of the project. 1.2 Conduct a literature review to support the project topic. 1.3 Identify the methodologies and tools to be used in the project.
LO2. 2. Design and implement a solution or conduct research to address the identified problem.	**2. Practical Implementation:** 2.1 Develop a detailed project plan with timelines and milestones. 2.2 Implement the proposed solution or conduct research according to the project plan. 2.3 Document the process, including any challenges encountered and how they were addressed.
LO3. 3. Analyze and evaluate the results of the project.	**3. Data Analysis and Evaluation:** 3.1 Analyze the data or outcomes of the project to draw meaningful conclusions. 3.2 Evaluate the effectiveness of the implemented solution or research findings. 3.3 Identify areas for further improvement or future research.
LO4. 4. Final Report and Presentation	4.1 Write a comprehensive final report detailing the project objectives, methodology, implementation, results, and conclusions. 4.2 Prepare and deliver an oral presentation summarizing the project findings and significance. 4.3 Demonstrate the ability to answer questions and engage in discussions about the project.

No	Learning Outcome / Topic	Learning and Teaching Activities	Which assessment criteria does the session relate to?	Day/month/ year/ signature
1	**Introduction to Capstone Projects**	**Introduction to Capstone Projects** Purpose, expectations, and real-world applications.	LO1: Problem Identification & Project Planning	
2	**Identifying Cybersecurity Problems**	**Identifying Cybersecurity Problems** Techniques for selecting feasible, impactful project topics.	LO1: Problem Identification & Project Planning	
3	**Developing a Project Proposal**	**Developing a Project Proposal** Writing clear objectives, scope, and success criteria.	LO1: Problem Identification & Project Planning	
4	**Literature Review Techniques**	**Literature Review Techniques** Researching academic papers, threat reports, and industry trends.	LO1: Problem Identification & Project Planning	
5	**Methodology Selection**	**Methodology Selection** Choosing between practical implementation (e.g., tool development) vs. theoretical research.	LO1: Problem Identification & Project Planning	
6	**Ethical & Legal Considerations**	**Ethical & Legal Considerations** IRB approval (if needed), responsible disclosure, and compliance.	LO1: Problem Identification & Project Planning	
7	**Project Planning Tools**	**Project Planning Tools** Gantt charts, Agile/Waterfall methodologies, risk assessment.	LO2: Solution Design & Implementation	

8	Review	- Review of LO1 topics - Practice questions and mock assessment - **Half-term assessment** based on LO1 (theory)	LO1 LO2	
9	**Technical Requirements Gathering**	**Technical Requirements Gathering** Hardware/software needs, datasets, or test environments.	LO2: Solution Design & Implementation	
10	**Prototyping & Development**	**Prototyping & Development** ands-on labs for tool building, network simulations, or malware analysis.	LO2: Solution Design & Implementation	
11	**Testing Frameworks**	**Testing Frameworks** Unit testing, penetration testing, or validation against benchmarks.	LO2: Solution Design & Implementation	
12	**Troubleshooting & Iteration**	**Troubleshooting & Iteration** Debugging, pivoting strategies, and version control (Git).	LO2: Solution Design & Implementation	
13	**Process Documentation**	**Process Documentation** Maintaining logs, screenshots, and meeting notes.	LO2: Solution Design & Implementation	
14	Review	- Comprehensive review of all learning outcomes - Practice questions and revision of key topics		
15	Midterm	- **Midterm assessment** covering all learning outcomes (theory and practical elements)		
16	Feedback & Reflection	- Review - Individual feedback on performance - Reflective discussion on key learning points		
17	**Data Analysis Techniques**	**Data Analysis Techniques** Quantitative (logs, metrics) vs. qualitative (user feedback) methods.	LO3: Analysis & Evaluation	
18	**Statistical Tools for Cybersecurity**	**Statistical Tools for Cybersecurity** Using Python/R for attack pattern analysis or risk modeling.	LO3: Analysis & Evaluation	

19	**Effectiveness Metrics**	**Effectiveness Metrics** Defining KPIs (e.g., reduced false positives, attack detection rates).	LO3: Analysis & Evaluation	
20	**Comparative Analysis**	**Comparative Analysis** Benchmarking against existing solutions or industry standards.	LO3: Analysis & Evaluation	
21	**Identifying Limitation**.	**Identifying Limitations** Scalability, cost, or false negatives in the solution.	LO3: Analysis & Evaluation	
22	**Future Work Recommendations**	**Future Work Recommendations** Proposing enhancements or follow-up studies.	LO3: Analysis & Evaluation	
23	Half-Term Exam	**Technical Writing for Reports** Structure (abstract, methodology, results), citations (APA/IEEE).	LO4: Reporting & Presentation	
24	**Visualizing Data**	**Visualizing Data** Creating graphs, network diagrams, and infographics.	LO4: Reporting & Presentation	
25	**Presentation Skills**	**Presentation Skills** Designing slides, storytelling techniques, and time management.	LO4: Reporting & Presentation	
26	**Demo Preparation**	**Demo Preparation** Live tool demonstrations or simulation walkthroughs.	LO4: Reporting & Presentation	
27	**Q&A & Peer Review**	**Q&A & Peer Review** Practicing defense of methodology and conclusions.	LO4: Reporting & Presentation	
28	**Project Showcase**	**Project Showcase** Presenting to stakeholders, competitions, or portfolio inclusion.	LO4: Reporting & Presentation	
29	Final Exam Preparation & Review	LO1, LO2, LO3, LO4	LO1, LO2, LO3, LO4	
30	Final Exam		LO1, LO2, LO3, LO4	